IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of:

Horst-Udo HAIN

Serial No. NEW   Group Art Unit: To be assigned

Confirmation No.

Filed: August 31, 2001   Examiner: To be assigned

For: METHOD FOR SPEECH SYNTHESIS

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

Before examination of the above-identified application, please amend the application as follows:

IN THE ABSTRACT:

Please REPLACE the Abstract originally filed with the enclosed Substitute Abstract attached hereto.

IN THE SPECIFICATION:

Please REPLACE the specification originally filed with the enclosed Substitute Specification.

IN THE CLAIMS:

Please REPLACE claims 1-11 and ADD new claims 12-18 in accordance with the following:

1. (ONCE AMENDED) A method for speech synthesis by a grapheme/phoneme

conversion, comprising:

searching for subwords of a given word in a database which contains phonetic transcriptions of words, the given word having a subword registered in the database, and a further constituent which is not registered in the database;

selecting a phonetic transcription from the database for the subword ;

phonetically transcribing the further constituent of the given word with the aid of an out-of-vocabulary (OOV) treatment ; and

combining the phonetic transcription of the subword and the phonetic transcription of the further constituent .

2. (ONCE AMENDED) The method for speech synthesis as claimed in claim 1, wherein
the out-of-vocabulary (OOV) treatment for phonetic transcription of the further constituent is performed as a function of the phonetic transcription of the subword .

3. (ONCE AMENDED) The method for speech synthesis as claimed in claim 1, wherein
the given word has at least first and second subwords registered in the database,
a search is made for both the first and second subwords in the database, a phonetic transcription is selected from the database for both the first and second subwords, and
the phonetic transcription of the first and second subwords and the phonetic transcription of the further constituent are combined.

4. (ONCE AMENDED) The method for speech synthesis as claimed in claim 3, wherein
the further constituent in the given word is arranged between the first subword and the second subword, and
the out-of-vocabulary (OOV) treatment for phonetic transcription of the further constituent is performed as a function of the phonetic transcription of the first subword and the phonetic transcription of the second subword .

5. (ONCE AMENDED) The method for speech synthesis as claimed in claim 1, wherein
the searching for subwords in the database is performed by searching for subwords which have a prescribed minimum length.

6. (ONCE AMENDED) The method for speech synthesis as claimed in claim 1, wherein

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if a plurality of subwords are found for the same word part, the longest subword is selected therefrom.

7. (ONCE AMENDED) The method for speech synthesis as claimed in claim 1, wherein the out-of-vocabulary (OOV) treatment for phonetic transcription of the further constituent is performed by a neuron network.

8. (ONCE AMENDED) The method for speech synthesis as claimed in claim 1, wherein the out-of-vocabulary (OOV) treatment for phonetic transcription of the further constituent is performed by a rule-based method.

9. (ONCE AMENDED) The method for speech synthesis as claimed in claim 1, wherein the subword is found in a first database, and

the out-of-vocabulary (OOV) treatment for phonetic transcription of the further constituent is performed by a second database which contains the phonetic transcription of filling particles normally used in the case of composite words.

10. (ONCE AMENDED) A system for speech synthesis by means of a grapheme/phoneme conversion, comprising:

a search unit to search subwords of a given word in a database which contains phonetic transcriptions of words, the given word having a subword registered in the database, and a further constituent which is not registered in the database;

a selection unit to select a phonetic transcription registered in the database for the subword;

a transcription unit to phonetically transcribe the further constituent of the given word with the aid of an out-of-vocabulary (OOV) treatment; and

an adder to combine the phonetic transcription of the subword and the phonetic transcription of the further constituent.

11. (ONCE AMENDED) A computer readable medium storing a speech synthesis program for controlling a computer to perform a method comprising:

searching for subwords of a given word in a database which contains phonetic transcriptions of words, the given word having a subword found in the database, and further

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constituent which is not registered in the database;

selecting a phonetic transcription registered in the database for the subword ;

phonetically transcribing the further constituent of the given word with the aid of an out-of-vocabulary (OOV) treatment ; and

combining the phonetic transcription of the subword found and the phonetic transcription of the further constituent .

12. (NEW) The method for speech synthesis as claimed in claim 2, wherein

the given word has at least first and second subwords registered in the database,

a search is made for both the first and second subwords in the database,

a phonetic transcription is selected from the database for both the first and second subwords, and

the phonetic transcription of the first and second subwords and the phonetic transcription of the further constituent are combined.

13. (NEW) The method for speech synthesis as claimed in claim 4, wherein

the searching for subwords in the database is performed by searching for subwords which have a prescribed minimum length.

14. (NEW) The method for speech synthesis as claimed in claim 13, wherein

if a plurality of subwords are found for the same word part, the longest subword is selected therefrom.

15. (NEW) The method for speech synthesis as claimed in claim 14, wherein

the out-of-vocabulary (OOV) treatment for phonetic transcription of the further constituent is performed by a neuron network.

16. (NEW) The method for speech synthesis as claimed in claim 15, wherein

the out-of-vocabulary (OOV) treatment for phonetic transcription of the further constituent is performed by a rule-based method.

17. (NEW) The method for speech synthesis as claimed in claim 16, wherein

the subwords are found in a first database, and

the out-of-vocabulary (OOV) treatment for phonetic transcription of the further constituent is performed by a second database which contains the phonetic transcription of filling particles normally used in the case of composite words.

18. (NEW) A method for speech synthesis of a given word having a subword registered in a database, which contains phonetic transcriptions of words, and having a further constituent which is not registered in the database, comprising:

searching in the database for a subword of a minimum length;

searching in the database for subwords having a length greater than the minimum length;

selecting the phonetic transcription of the longest subword retrieved;

phonetically transcribing the further constituent of the given word with an out-of-vocabulary (OOV) treatment as a function of the selected phonetic transcription of the subword;

combining the selected phonetic transcription of the subword and the phonetic transcription of the further constituent.

REMARKS

This Preliminary Amendment is submitted to improve the form of the specification as originally-filed. A substitute specification and marked-up copy of the original specification are enclosed. No new matter is added to these documents.

It is respectfully requested that this Preliminary Amendment be entered in the above-referenced application.

If any further fees are required in connection with the filing of this Preliminary Amendment, please charge same to our Deposit Account No. 19-3935.

Respectfully submitted,

STAAS & HALSEY LLP

Date: _August 3, 2001_ By: _Mark Henry_

Mark J. Henry
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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE ABSTRACT:

Please REPLACE the Abstract originally filed with the enclosed Substitute Abstract attached hereto.

IN THE SPECIFICATION:

Please REPLACE the specification originally filed with the enclosed Substitute Specification.

IN THE CLAIMS:

Please AMEND the following claims:

1. (ONCE AMENDED) A method for speech synthesis by [means of] a grapheme/phoneme conversion, [in which] comprising:

[- a search is made] searching for subwords of a given word in a database which contains phonetic transcriptions of words, the given word having a [at least one] subword [of the given word is found] registered in the database, and a further constituent which is not registered in the database;

selecting a phonetic transcription [registered in] from the database [is selected] for the subword [found,] ;

[- in addition to the subword found, the given word has at least one further constituent which is not registered in the database,

- this] phonetically transcribing the further constituent [is phonetically transcribed] of the given word with the aid of an out-of-vocabulary (OOV) treatment[,] ; and

[-] combining the phonetic transcription of the subword [found] and the phonetic transcription of the further constituent [are combined] .

2. (ONCE AMENDED) The method for speech synthesis as claimed in claim 1, [in which] wherein

[-] the out-of-vocabulary (OOV) treatment for phonetic transcription of the further

constituent is performed as a function of the phonetic transcription of the subword [found] .

3. (ONCE AMENDED) The method for speech synthesis as claimed in claim 1 [or 2] , [in which] wherein

the given word has at least first and second subwords registered in the database,

[-] a search is made for [further] both the first and second subwords [of the word found] in the database, [- at least one further subword of the given word is found in the database,

-] a phonetic transcription [registered in the database] is selected from the database for [this further subword found] both the first and second subwords, and

[-] the phonetic transcription of the first and second subwords [subword found, the phonetic transcription of the further subword found] and the phonetic transcription of the further constituent are combined.

4. (ONCE AMENDED) The method for speech synthesis as claimed in claim 3, [in which] wherein

[-] the further constituent in the given word is arranged between the first subword [found] and the [further] second subword [found] , and

[-] the out-of-vocabulary (OOV) treatment for phonetic transcription of the further constituent is performed as a function of the phonetic transcription of the first subword [found] and the phonetic transcription of the [further] second subword [found] .

5. (ONCE AMENDED) The method for speech synthesis as claimed in [at least one of the preceding claims, in which] claim 1, wherein

[- a search is made] the searching for subwords in the database is performed by searching for subwords which have [at least one] a prescribed minimum length.

6. (ONCE AMENDED) The method for speech synthesis as claimed in [at least one of the preceding claims, in which] claim 1, wherein

[- when] if a plurality of subwords are found for the same word part, the longest subword is selected therefrom.

7. (ONCE AMENDED) The method for speech synthesis as claimed in [at least one of the preceding claims, in which] claim 1, wherein

[-] the out-of-vocabulary (OOV) treatment for phonetic transcription of the further constituent is performed by [means of] a neuron network.

8. (ONCE AMENDED) The method for speech synthesis as claimed in [at least one of the preceding claims, in which] claim 1, wherein

[-] the out-of-vocabulary (OOV) treatment for phonetic transcription of the further constituent is performed by [means of] a rule-based method.

9. (ONCE AMENDED) The method for speech synthesis as claimed in [at least one of the preceding claims, in which] claim 1, wherein

the subword is found in a first database, and

[-] the out-of-vocabulary (OOV) treatment for phonetic transcription of the further constituent is performed by [means of] a second database which contains the phonetic transcription of filling particles normally used in the case of composite words.

10. (ONCE AMENDED) [An arrangement] A system for speech synthesis by means of a grapheme/phoneme conversion, [which is designed] comprising:

[- such that it is possible to make a search for subwords of a given word in a database which contains phonetic transcriptions of words,

- such that at least one subword of the given word can be found in the database,

- such that a phonetic transcription registered in the database can be selected for the subword found,

- in addition to the subword found the given word has at least one further constituent, which is not registered in the database,

- such that this further constituent can be phonetically transcribed with the aid of an OOV treatment, and

- such that the phonetic transcription of the subword found and the phonetic transcription of the further constituent can be combined]

a search unit to search subwords of a given word in a database which contains phonetic transcriptions of words, the given word having a subword registered in the database, and a further constituent which is not registered in the database;

a selection unit to select a phonetic transcription registered in the database for the subword;

a transcription unit to phonetically transcribe the further constituent of the given word with the aid of an out-of-vocabulary (OOV) treatment; and

an adder to combine the phonetic transcription of the subword and the phonetic transcription of the further constituent.

11. (ONCE AMENDED) A computer readable medium storing a speech synthesis program [product] for [speech synthesis by means of a grapheme/phoneme conversion, in which during running on at least one processor unit] controlling a computer to perform a method comprising:

[- a search is made] searching for subwords of a given word in a database which contains phonetic transcriptions of words, the given word having a [- at least one] subword [of the given word is] found in the database, and further constituent which is not registered in the database;

selecting [-] a phonetic transcription registered in the database [is selected] for the subword [found,] ;

[- in addition to the subword found, the given word has at least one further constituent which is not registered in the database,

- this] phonetically transcribing the further constituent [is phonetically transcribed] of the given word with the aid of an out-of-vocabulary (OOV) treatment[,] ; and

[-] combining the phonetic transcription of the subword found and the phonetic transcription of the further constituent [are combined] .

Please ADD the following claims:

12. (NEW) The method for speech synthesis as claimed in claim 2, wherein

the given word has at least first and second subwords registered in the database,

a search is made for both the first and second subwords in the database,

a phonetic transcription is selected from the database for both the first and second subwords, and

the phonetic transcription of the first and second subwords and the phonetic transcription of the further constituent are combined.

13. (NEW) The method for speech synthesis as claimed in claim 4, wherein

the searching for subwords in the database is performed by searching for subwords which have a prescribed minimum length.

14. (NEW) The method for speech synthesis as claimed in claim 13, wherein

if a plurality of subwords are found for the same word part, the longest subword is selected therefrom.

15. (NEW) The method for speech synthesis as claimed in claim 14, wherein

the out-of-vocabulary (OOV) treatment for phonetic transcription of the further constituent is performed by a neuron network.

16. (NEW) The method for speech synthesis as claimed in claim 15, wherein

the out-of-vocabulary (OOV) treatment for phonetic transcription of the further constituent is performed by a rule-based method.

17. (NEW) The method for speech synthesis as claimed in claim 16, wherein

the subwords are found in a first database, and

the out-of-vocabulary (OOV) treatment for phonetic transcription of the further constituent is performed by a second database which contains the phonetic transcription of filling particles normally used in the case of composite words.

18. (NEW) A method for speech synthesis of a given word having a subword registered in a database, which contains phonetic transcriptions of words, and having a further constituent which is not registered in the database, comprising:

searching in the database for a subword of a minimum length;

searching in the database for subwords having a length greater than the minimum length;

selecting the phonetic transcription of the longest subword retrieved;

phonetically transcribing the further constituent of the given word with an out-of-vocabulary (OOV) treatment as a function of the selected phonetic transcription of the subword;

combining the selected phonetic transcription of the subword and the phonetic transcription of the further constituent.

Abstract

A method, an arrangement and a computer program synthesize speech by grapheme/phoneme conversion. In this case, a search is made for subwords of a given word in a database which contains phonetic transcriptions of words. If at least one subword of the given word is found in the database, a phonetic transcription registered in the database is selected for the subword found. In addition to the subword found, the given word has at least one further constituent, which is not registered in the database. This further constituent is phonetically transcribed with the aid of an OOV treatment, and the phonetic transcription of the subword found and the phonetic transcription of the further constituent are combined.

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In re Patent Application of:

Horst-Udo HAIN

Application No.: NEW

Group Art Unit: To be assigned

Filed: August 31, 2001

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For: METHOD FOR SPEECH SYNTHESIS

LETTER TO THE EXAMINER REQUESTING APPROVAL OF THE CHANGES TO THE DRAWINGS

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

It is respectfully requested that the Examiner having jurisdiction over the subject application approve the amendments to the drawings as indicated in RED on the attached copy of Figs. 1 and 2.

STAAS & HALSEY LLP

Date: August 31, 2001

By: Mark J. Henry
Registration No. 36,162

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Washington, D.C. 20001
(202) 434-1500

FIG 1

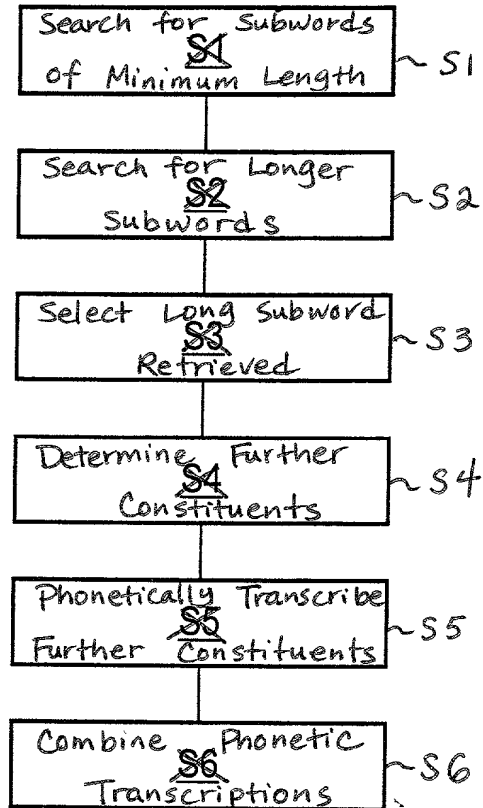Search for Subwords
~~S1~~
of Minimum Length   ~S1

Search for Longer
~~S2~~
Subwords   ~S2

Select Long Subword
~~S3~~
Retrieved   ~S3

Determine Further
~~S4~~
Constituents   ~S4

Phonetically Transcribe
~~S5~~
Further Constituents   ~S5

Combine Phonetic
~~S6~~
Transcriptions   ~S6

FIG 2

Training   ~1
~~1~~

S   ~2
~~2~~

lager   ~3
~~3~~